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Letters to the Editor

Frontal sinus radiographs – A useful means of identification

Forensic importance of frontal sinus radiographs is well-known in identification.[1–4] Comparison of antemortem and postmortem frontal sinus radiographs serves as an excellent method of identification in the forensic case work where other means of positive identification like DNA matching and reconstruction of facial contours are not possible.[5,6]

In an interesting case report[7] recently published on the subject matter the authors have made certain surprising observations and conclusions. In the reported case of an unidentified victim, postmortem facial photographs, fingerprints and DNA material was collected as evidentiary material prior to the burial procedure. Later on the victim was eventually identified by the family members from postmortem photographs. Since fingerprint records were not available and DNA matching is not done routinely, a 6 year old skull radiograph (AP view) was acquired from the presumed family members, and the skull and jaw bone were obtained after exhumation. Postmortem radiographs of the skull were taken for comparison with the antemortem records.[7]

On comparing the same reference points in the antemortem and postmortem images, the values obtained did not match. The authors at this point have attributed the difference in absolute values to the changes in the positioning of the skull while radiographs were taken, radiographic distortion, and absence of soft tissues in the postmortem specimen. The authors had the liberty to identity the exhumed skull and mandible even when the antemortem and postmortem values did not match since the real identity was never a question in the reported case; the victim was already identified by the postmortem photographs. The possibility of antemortem and postmortem radiographs belonging to two different individuals was never considered. The authors further observed the antemortem and postmortem ratios for different variables to be the same. Probably owing to the same reason that the actual identity was never in doubt, the authors very conveniently considered that same ratios indicate the validity of the applied technique. Table 1 in the article [7] however does not support the claim of the authors. The ratio for different variables actually varies from 0.80 to 0.89 and this range itself appears quite big to be considered as same.

It is quite apparent from the case details that since the victim was already known and initially identified by postmortem photographs, even after a disparity in absolute values in antemortem and postmortem radiographs, and variations in the observed antemortem and postmortem ratios authors were able to fix the identity of the victim with certainty. Important issue remains if it is reliably possible to identify an individual (in absence of photographs) by this method in cases when the values in antemortem and postmortem radiographs show a disparity as reported in the case.

Apart from the absolute values, other points of resemblances between the antemortem and postmortem images such as shape, margins and density etc. need to be confirmed in such cases of disparity. Instead of taking antemortem and postmortem ratios, facial reconstruction or superimposition with the help of photographs remained the better available choice for confirmation of identification. The authors[7] claim that the ratios between antemortem and postmortem radiographs provide evidence looks overenthusiastic when the ratios actually vary to a certain extent. Similar ratios may be observed in skulls belonging to different individuals and thus these ratios should not be taken as a reliable parameter of identification from frontal sinus prints.

Conflict of Interest

None declared.

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Cerebral infarction due to aortic dissection which developed immediately after traffic accident

In Japan, the number of forensic and clinical autopsies is extremely small compared with the other advanced nations. Consequently, postmortem radiography, computed tomography (CT), and magnetic resonance imaging (MRI) have been recently recognized as a substitute for autopsy (so-called autopsy imaging).[1] In the case described below, the manner of death was clinically diagnosed as natural death from the medical history of the cadaver and MRI and MR angiography (MRA) at admission, but forensic autopsy revealed that was probably accidental death.

An elderly male had suffered a traffic accident. He started to talk with the driver responsible after the accident; however, he collapsed suddenly in the act of talking, and fell into a deep coma. In hospital emergency, cranial MRI by diffusion weighted imaging showed a high intensity area in the cortex of the right cerebral hemisphere and of the longitudinal fissure side of the left cerebral hemisphere (Fig. 1a). Moreover, the intracranial segment of the right internal carotid artery was absent on MRA (Fig. 1b). Accordingly, he was diagnosed as early-onset cerebral infarction of right carotid artery due to thromboembolism. However, he died 25 h after the occurrence of the traffic accident.

Forensic autopsy showed two contusions: on the left precordial region and on the left side of the lumbar region externally. In accordance with these contusions, the left costicartilages and the left ribs were fractured, and there was hemorrhage on the anterior mediastinum. Moreover, Aortic dissection, the entry of which was the intimal fissure on the right wall of ascending aorta, was observed on the beginning of the aorta, which spread to the brachiocephalic artery, aortic arch and bilateral common carotid arteries, resulting in the obstruction of the true lumen (Fig. 2a–c). The cerebrum with stem and cerebellum weighed 1498 g, which was compatible with cerebral infarction on bilateral anterior and right middle cerebral artery territory, macro- and microscopically. The heart weighed 517 g with concentric cardiac hypertrophy. Bilateral coronary arteries had severe arteriosclerosis, resulting in old infracted lesions in the posterior wall of the left ventricle and ventricular septum microscopically.

Aortic dissection is an important emergency with high morbidity and mortality, and its incidence is estimated as 5–30 cases per million per year[2]; however, aortic dissection is rare as a cause of massive cerebral infarction.[3] Moreover, he had been under medication because of atrial fibrillation. It is thus considered that the physician diagnosed the cause of death and the manner of death as cerebral infarction due to thromboembolism and natural disease, respectively. Generally, in cases where the physicians have diagnosed as natural death, forensic autopsy tends not to be performed in Japan; nevertheless, forensic autopsy was performed in this case, and revealed that aortic dissection caused cerebral infarction. In consideration of the fact that the autopsy rate of traffic accident-related deaths is about 5%, even if a physician diagnoses the manner of death as natural death in such cases, we propose that postmortem diagnostic imaging must be performed on the

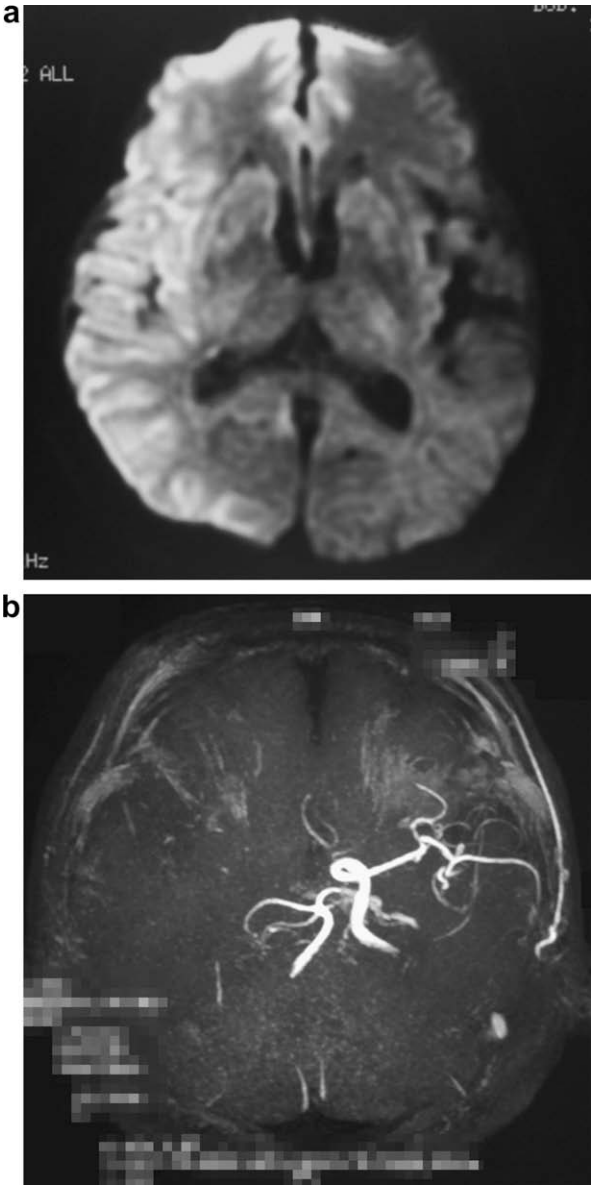

Fig. 1. Magnetic resonance (MR) imaging at admission. (a) Cranial MRI by diffusion weighted imaging. (b) Cranial MR angiogram.

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